REMARKS

The Office Action dated May 4, 2006 has been received and carefully noted. The above amendments to the claims and the following remarks are submitted as a full and complete response thereto.

Claims 2-8, 12, 13, 15, 19, 20, 23 and 24 are amended to particularly point out and distinctly claim the subject matter of the invention. No new matter is added. Claims 1-24 are respectfully submitted for consideration.

The Office Action rejected claims 1-24 under 35 U.S.C. 103(a) as being obvious over US Patent No. 5,570,098 to Searle et al. (Searle), in view of US Patent No. 6,091,955 to Aalto et al. (Aalto). The Office Action took the position that Searle disclosed all of the features of these claims except searching for the radio cells having the antenna tilting factors to fulfill a predetermined criterion and tilting antennas of the searched radio cells, and gathering information on the interference, which comprises pilot-channel signal-strength measurement results measured by user terminals. The Office Action asserted that Aalto disclosed these features. Applicants respectfully submit that the cited references taken individually or in combination, fail to disclose or suggest all of the features recited in any of the pending claims.

Claim 1, from which claims 2-7 depend, is directed to an antenna adjustment method. Information is gathered on interference in predetermined radio cells. The gathered information radio cell-specifically for processing is arranged. A tilting factor is determined for at least one predetermined radio cell, wherein the tilting factor relates to

the interference the radio cell produces to other cells. The radio cells having the antenna tilting factors that fulfill a predetermined criterion are searched. The antennas of the searched radio cells are tilted.

Claim 8, from which claims 9-14 depend, is directed to an antenna adjustment system. A gathering unit is configured to gather information on interference in predetermined radio cells. An arranging unit configured to arrange the gathered information radio cell-specifically for processing. A determining unit is configured to determine a tilting factor for at least one predetermined radio cell, wherein the tilting factor relates to the interference that the radio cell produces to other cells. A searching unit is configured to search for radio cells having the antenna tilting factors that fulfill a predetermined criterion.

Claim 15, from which claims 16-22 depend, is directed to a network element for adjusting antennas. A gathering unit is configured to gather information on interference in predetermined radio cells. An arranging unit is configured to arrange the gathered information radio cell-specifically for processing. A determining unit is configured to determine a tilting factor for at least one predetermined radio cell, wherein the tilting factor relates to the interference that the radio cell produces to other cells. A searching unit is configured to search for the radio cells having the antenna tilting factors that fulfill a predetermined criterion.

Claim 23 is directed to an antenna adjustment system. A gathering means gathers information on interference in predetermined radio cells. An arranging means arranges

the gathered information radio cell-specifically for processing. A determining means determines a tilting factor for at least one predetermined radio cell, wherein the tilting factor relates to the interference that the radio cell produces to other cells. A searching means searches the radio cells having the antenna tilting factors that fulfill a predetermined criterion.

Claim 24 is directed to a network element for adjusting antennas. A gathering means arranges information on interference in predetermined radio cells. An arranging means arranges the gathered information radio cell-specifically for processing. A determining means determines a tilting factor for at least one predetermined radio cell, wherein the tilting factor relates to the interference that the radio cell produces to other cells. A searching means searches the radio cells having the antenna tilting factors that fulfill a predetermined criterion.

Applicants respectfully submit that each of the pending claims recites features that are neither disclosed nor suggested in any of the cited references.

Searle discloses a base station antenna arrangement, wherein in addition to telecommunications message traffic control and supervisory information can be exchanged between the antenna and the base station network (See for example the Abstract of Serle). For that purpose, a smart antenna comprises an antenna electronics unit 14, and a base station comprises a cabin electronics unit 16. An interface link 17 between the base station and the smart antenna is also provided. The previous base band information is no longer required, reducing the loading on the signaling through the

cellular network. It is replaced by assignment information on the new interface link between the base station and the smart antenna (See for example, Figure 5, column 4 lines, 43 to 64).

The smart antenna is depicted in Figure 6 of Searle in further detail. A control processor 80 is provided. The control processor controls transmit and receive switch matrices such that the best beam (normally the one pointing at the mobile stations geographic position) parallel receivers and data from the control buses to the base station. Knowledge of which channel the mobile is being moved to, allows a prompt and non-disruptive assignment to the best beam. The control algorithms used will fall into two basic classes, one for initial acquisition of the best beam for a new call, and one for tracking of the best beam when a call is in progress (See for example, column 6, line 65 to column 7, line 20).

Searle also discloses that large areas of antenna beam overlap can cause problems with interference and with a much higher rate of handover, for mobiles, between cells, which can lead to a heavy loading on the network. By adjusting the power levels in the beams, the areas of overlap can be greatly reduced. This will reduce the conflict of which base station is handling a mobile and the interference caused by overlapping coverage areas. It will also result in a reduction in power consumption for individual cells (column 12, lines 4 to 13).

Aalto discloses how a capacity can be increased in underlay-overlay cellular radio networks (column 2, line 66 to column 3 line 4). Aalto discloses that the operating

frequency spectrum of the cellular network is divided into regular frequencies and super-reuse frequencies. In one layer, the "overlay layer" utilizes regular frequencies and a conventional frequency reuse pattern and cell coverage to achieve seamless overall coverage. In another layer, the "underlay layer" is composed of super-reuse frequencies. The underlay network employs a very tight frequency reuse pattern to provide extended capacity. In the underlay network the same frequency is reused more often than in the overlay network, and hence, more transceivers can be allocated within the same bandwidth (column 3, line 43 to column 4, line 7). Aalto further discloses that a co-channel interference level of each specific call is controlled. The radio network estimates the degree of interference on different frequencies and directs the mobile stations to those frequencies that are sufficiently "clean" of interference to sustain a good radio connection quality (column 4, lines 17 to 37).

Applicants respectfully submit that the cited references fail to disclose or suggest at least the feature that information on interference in radio cells would be arranged radio cell-specifically for processing or that a tilting factor for at least one predetermined radio cell would be determined, wherein the tilting factor relates to the interference the radio cell produces to other cells, as recited in claim 1 and similarly recited in claims 8, 15, 23 and 24. The Office Action relied on Searle to disclose this feature. However, Searle merely discloses that a smart antenna comprises an antenna electronics unit and a base station comprises a cabin electronics unit and also an interface link between the base station and the smart antenna is provided for exchanging control and supervisory in-

formation between the antenna and the base station network. Searle discloses that large areas of antenna beam overlap can cause problems with interference and with a much higher rate of handover, for mobiles, between cells, which can lead to a heavy loading on the network. By adjusting the power levels in the beams, the areas of overlap can be greatly reduced. Further Aalto fails to cure this deficiency.

Further, Applicants respectfully submit that Aalto fails to cure the admitted deficiencies of Searle. As stated above, the Office Action admitted that Searle failed to disclose or suggest the features of searching for the radio cells having the antenna tilting factors to fulfill a predetermined criterion and tilting antennas of the searched radio cells, and gathering information on the interference, which comprises pilot-channel signal-strength measurement results measured by user terminals, and alleged that Aalto disclosed these features. However, Aalto merely discloses that the operating frequency spectrum of the cellular network, is divided into regular frequencies and super-reuse frequencies. The "overlay layer" utilizes regular frequencies and a conventional frequency reuse pattern and cell coverage to achieve seamless overall coverage. The "underlay layer" is composed of super-reuse frequencies. Thus, Aalto fails to cure the admitted deficiencies of Searle.

Still further, Applicants respectfully submit that the Office Action further failed to establish *prima facie* obviousness because one skilled in the art would not be motivated to modify the teachings of Searle with Aalto.

To establish *prima facie* obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicants' disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998).

In the present case, one skilled in the art would not modify Searle with Aalto because the two references are non-analogous, and are not within the same field of endeavor as alleged in the Office Action. Searle is directed to how control and supervisory information can be exchanged between the antenna and the base station network. On the other hand, Aalto is directed to how capacity can be increased in underlay-overlay cellular radio networks. Thus, the two references are non-analogous art and therefore, one skilled in the art would not be motivated to disclose or suggest all of the features recited in any of the pending claims.

Applicants respectfully submit that because claims 2-7, 9-14 and 16-22 depend from claims 1, 8 and 15 respectively, these claims are allowable at least for the same reasons as claims 1, 8 and 15, as well as for the additional features recited in these dependent claims.

Based at least on the above, Applicants respectfully submit that the cited references fail to disclose or suggest all of the features recited in any of claims 1-24. Accordingly, withdrawal of the rejection of claims 1-24 under 35 U.S.C. 103(a) is respectfully requested.

Applicants respectfully request that each of claims 1-24 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Enclosures: Petition for Extension of Time
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